BTL

guide to laser therapy

dentistry

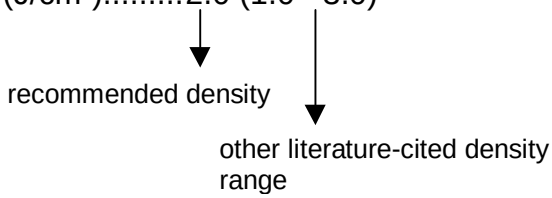
01ENMK2000/03/07

List of Diagnoses:

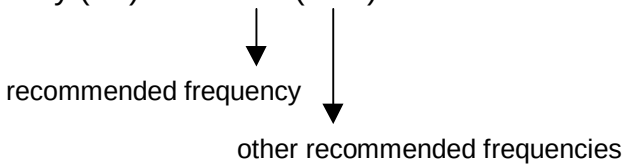
Alveolitis
Analgia
Angulus infectiosus
Stomatitis aphtosa
Caries dentis
Cicatrix cheloidum
Cicatrix recens
Contusio
Decubitus
Dentitio difficilis - analgia
Fractura - analgia
Gingivitis
Herpes
Hyperaemia pulpae
Hypersensibilitas dentinalis
Morbus temporomandibulare
Neuralgia nervi trigemini
Parodontitis
Periodontitis
Postextractio
Preparatio
Pulpa aperta
Pulpitis
Sanatio postoperativa

Comments:

- Recommended density (J/cm^2).....2.0 (1.0 - 3.0)



- Recommended frequency (Hz).....10.0 (9.12)



- 1st part of therapy
  2nd part of therapy refers to therapy consisting of 2 different programs.

  - Therapy time at max. output (min.)..... therapy time in minutes if maximal output of probe and irradiated area 1cm^2 are set.
    Considered maximal output of red probe is 30 mW, infrared probe 200 mW.
    Warning! You must adjust the area value according to the size of irradiated area. Change of area will influence therapy time.

This Guide to laser therapy has been written in cooperation with top medical specialists in the field of laser therapy. It has been based on physicians' everyday experience with use of therapy lasers in their practice, as well as on publicly available articles and books on the subject.

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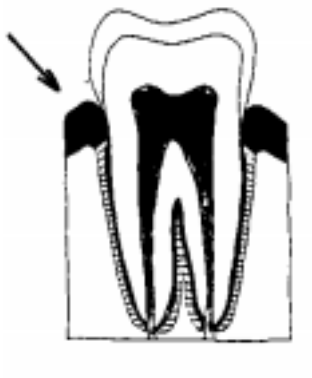
Diagnosis: **Alveolitis**

Programme number: 0300



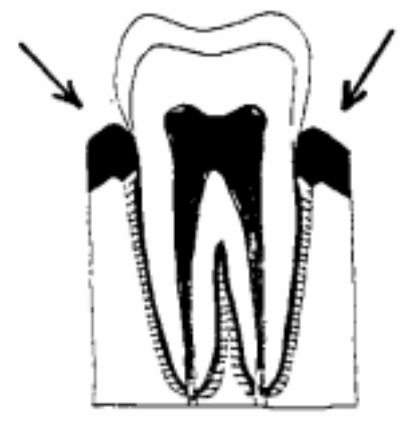
Recommended density (J/cm^2)	3.0 (2.0 - 4.0)
Recommended frequency (Hz)	6.0
Therapy time at max. output (in min.)	2.05
Number of treatments per week	every other day (3x per week)
Number of treatments total	1 - 3
Recommended BTL probe	red
Recommended output of BTL probe	30 mW

Comment:

- Recommended procedure:
  1. Disinfect the extraction wound with chlorhexidin.
  2. Place the probe into the wound and irradiate.
  3. Fill in the extraction wound with Avolgyl or Repin.
- Repeat 1 - 3 times.
- Laser therapy can also decrease pain in the lymphatic gland.
- An analgesic effect is achieved and the healing process is hastened.
- Positive results appear immediately after the first laser application.

Diagnosis: **Analgia**

Programme number: 0301



Recommended density (J/cm^2) without complications with hematoma with injured nerve	(3.5) 3.5 4.5 (intra-orally); 5.5 (extra-orally) 5.5
Recommended frequency (Hz)	10.0
Therapy time at max. output (in min.)	2.25
Number of treatments per week	min. 1
Number of treatments total	min. 1
Recommended BTL probe	red
Recommended output of BTL probe	30 mW

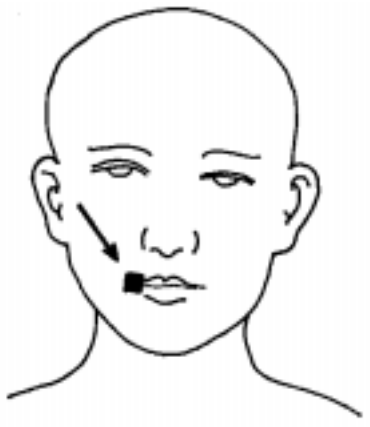
Comment:

- If a needle is used that is too large, or anesthesia is injected too quickly, the blood vessel can be injured and a hematoma may occur.
- Laser therapy shortens the healing process of the hematoma.
- Apply intra-orally to the injection area, and extra-orally to the affected muscle. For a nerve injury, apply to the injured area.
- Continue intra- and extra-oral treatment sessions until symptoms of the hematoma regress.
- Parasthesia, hypesthesia and anesthesia following a nerve injury caused by the injection needle requires long-term treatment.
- Laser therapy induces healing. Apply 1 - 2 a week for a total of 10 treatments at 2 - 4 J/cm^2.
- Laser therapy reduces pain, contractures, and the risk of hematoma formation.

Diagnosis: **Angulus infectiosus**

(infectious oral disease)

Programme No: 0302



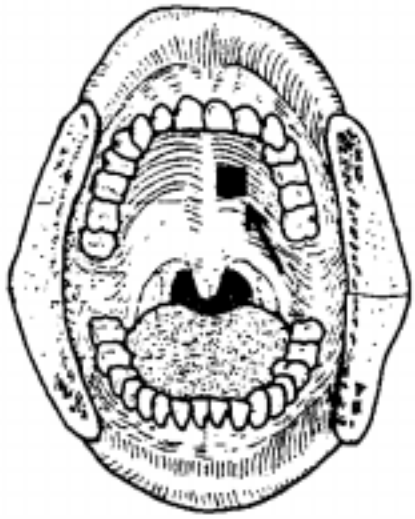
Recommended density (J/cm^2)	1.6 (1.0 - 2.0)
Recommended frequency (Hz)	5.2
Therapy time at max. output (in min.)	1.06
Number of treatments per week	daily – every other day
Number of treatments total	min. 3 - 5
Recommended BTL probe	red
Recommended output of BTL probe	30 mW

Comment:

- Irradiate the affected area.
- Prior to therapy, remove local medicaments such as gels or plaster.
- Results can be seen after only 3 therapy sessions.
- Irradiation induces healing.
- For chronic disease, duration of therapy is longer.

Diagnosis: Stomatitis aphtosa

Programme No: 0303, 0304



Recommended density (J/cm^2)	3.0 (2.5 - 4.0)
Recommended frequency (Hz)	cont. 1st part of therapy 5.2 2nd part of therapy
Therapy time at max. output (in min.)	1.40 + 2.05
Number of treatments per week	2 - 5 (2x per day possible)
Number of treatments total	2 - 5
Recommended BTL probe	red
Recommended output of BTL probe	30 mW

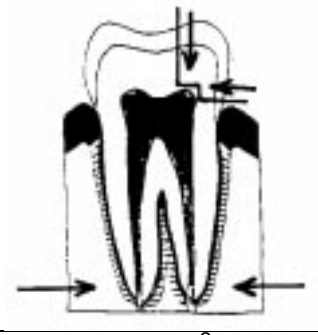
Comment:

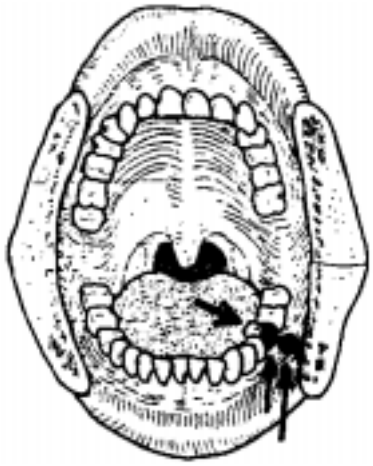
- Irradiate the entire affected surface as close to the center as possible.
- Traditional treatment methods usually last 8 - 10 days, but laser therapy cuts the duration to 1 - 2 days.
- Induces faster cessation of the burning sensation.
- Laser therapy reduces the number and duration of recidivation.
- 1st part of therapy and 2nd part of therapy should be understood as two parts of one therapy session.

Diagnosis: Caries dentis

(dental caries)

Programme No: 0305





Recommended density (J/cm^2)	2.0 (2.0 - 4.0)
Recommended frequency (Hz)	3.3
Therapy time at max. output (in min.)	1.23
Number of treatments per week	1
Number of treatments total	1
Recommended BTL probe	red
Recommended output of BTL probe	30 mW

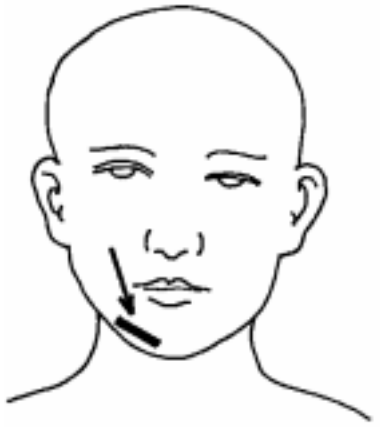
Comment:

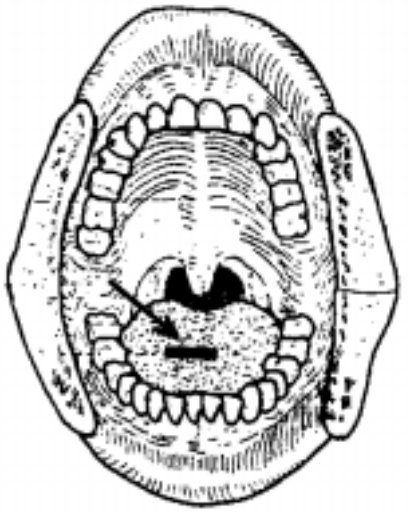
- Prior to extraction or filling, irradiate the dentine in the caries hollow, as well as the top of the root.
- Hastens lymphatic draining in the apical area, reduces edema and hyperemia in the pulp, and has an analgesic effect to nerve endings in the pulp.
- Sub-gum caries surgery can injure the papilla, which leads to bleeding that makes filling difficult. Laser therapy lowers pain and often stops bleeding.
- Irradiate injured papilla at 1 - 2 J/cm^2.
- Tooth core caries: Laser therapy has an analgesic effect, and stimulates odontoblasts to form tertiary dentine. Density: 4 J/cm^2.

Diagnosis: **Cicatrix cheloidum**

(keloid scar)

Programme No: 0306





Recommended density (J/cm^2)	3.0 (2.0 - 6.0)
Recommended frequency (Hz)	5.0 (9.12)
Therapy time at max. output (in min.)	2.05
Number of treatments per week	2 - 3
Number of treatments total	10 - 15 (40)
Recommended BTL probe	red
Recommended output of BTL probe	30 mW

Comment:

- Irradiate the entire scar.
- Nociceptive activity of keloid scars is decreased.
- Irradiate in combination with surgical treatment.
- As a preventive treatment, irradiate persons with keloid forming tendencies.
- The older the scar, the longer the treatment.
- Irradiation decreases coloration of older scars.

Diagnosis: Cicatrix recens

(fresh scar)

Programme No: 0307, 0308

Recommended density (J/cm^2)	4.0 (3.0 - 7.0) 1st part of therapy 4.0 2nd part of therapy
Recommended frequency (Hz)	cont. 1st part of therapy 5.0 (5.3) 2nd part of therapy
Therapy time at max. output (in min.)	2.13 + 2.46
Number of treatments per week	daily - 3x per week
Number of treatments total	5 - 15
Recommended BTL probe	red
Recommended output of BTL probe	30 mW

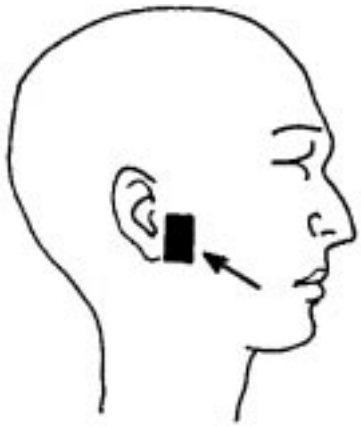
Comment:

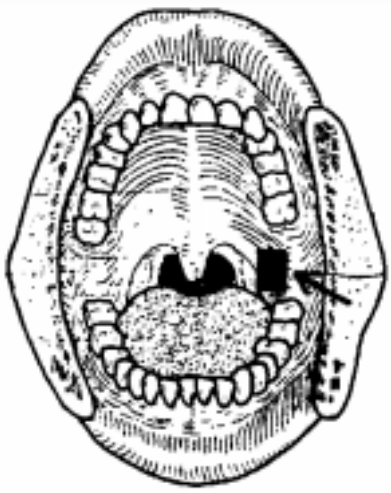
- Irradiate the entire scar.
- Begin irradiation immediately after surgery.
- Acute cases: set a lower dose and irradiate more frequently.
- Chronic cases: set a higher dose and irradiate less frequently.
- Good laser therapy results can be achieved with burns, ulcers and keloid scars.
- According to some experts it is advisable to irradiate the planned area 2 - 3 days in advance, or during the actual surgery.
- Improved oxidation in the cells effects microcirculation in the affected tissue, and improves cellular energy use and waste drainage.
- Laser treatment has an analgesic effect, and also reduces infiltration, swelling and hematoma.
- 1st part of therapy and 2nd part of therapy should be understood as two parts of one therapy session.

Diagnosis: **Contusio**

(contusion)

Programme No: 0309





Recommended density (J/cm^2)	3.0 (2.0 - 4.0)
Recommended frequency (Hz)	10.0 (8.0)
Therapy time at max. output (in min.)	0.18
Number of treatments per week	2
Number of treatments total	until disappearance
Recommended BTL probe	infrared
Recommended output of BTL probe	200 mW

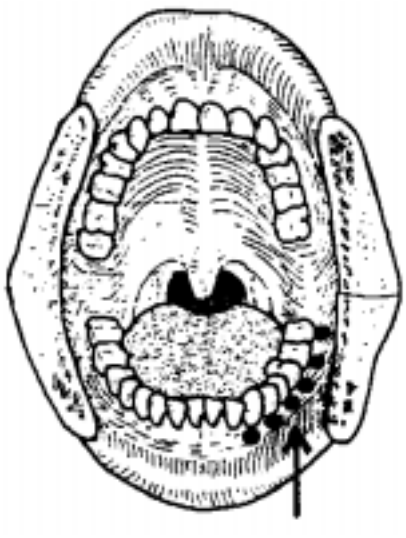
Comment:

- Joint contusion is accompanied by a limitation of mouth opening and swelling above the joint.
- Irradiate to decrease pain and edema, and to absorb the hematoma.
- Use 8.0 Hz anti-edema frequency.

Diagnosis: Decubitus

(decubitus, bedsores)

Programme No: 0310



Recommended density (J/cm^2)	2.0 (1.0 - 3.0)
Recommended frequency (Hz)	6.0
Therapy time at max. output (in min.)	1.23
Number of treatments per week	daily
Number of treatments total	min. 1 - 2
Recommended BTL probe	red
Recommended output of BTL probe	30 mW

Comment:

- Laser therapy has an analgesic and healing effect.
- Chronic disease: daily irradiation is recommended.

Diagnosis: Dentitio difficilis

(Difficulty in cutting the bottom third tooth)

Programme No: 0311

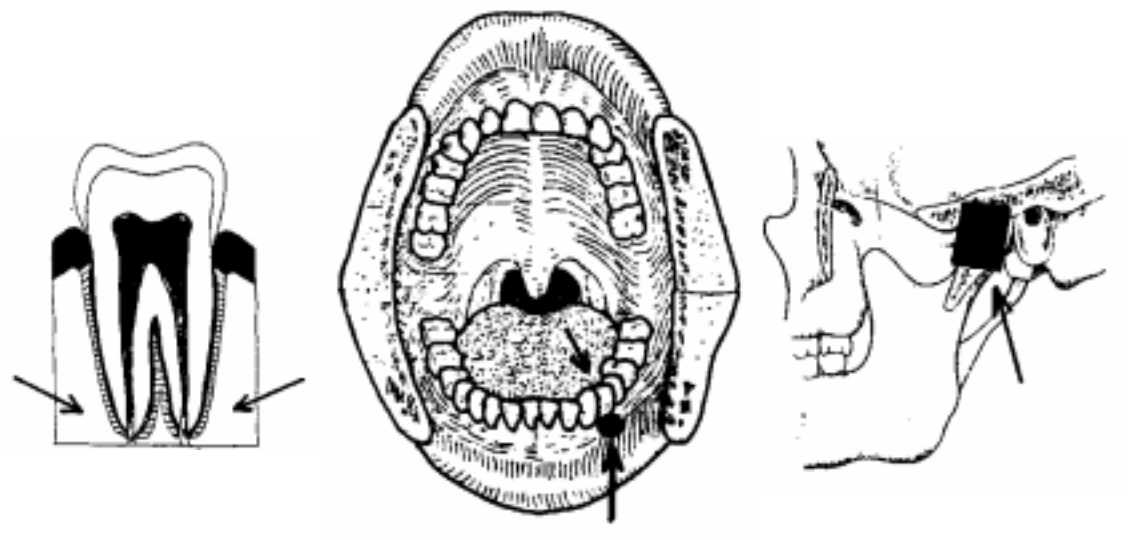
Recommended density (J/cm^2)	3.0 (2.0 - 4.0)
Recommended frequency (Hz)	5.0
Therapy time at max. output (in min.)	2.05
Number of treatments per week	daily - 5x per week
Number of treatments total	min. 2 - 3, max. 10 - 15
Recommended BTL probe	red
Recommended output of BTL probe	30 mW

Comment:

- This condition is accompanied by considerable pain and difficulty in opening the mouth.
- Correct diagnosis and prognosis of the tooth, and the corresponding surgical therapy is very important.
- Laser therapy improves the ability to open the mouth, and reduces swelling which enables better surgical treatment.
- Induces analgesic, anti-edematous and healing effect.

Diagnosis: **Fractura - analgia**
(fracture of alveolar bone, jaw joints)

Programme No: 0312



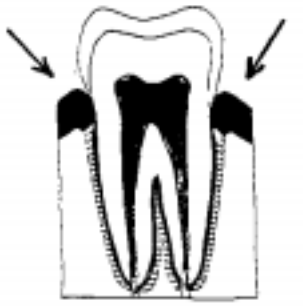
Recommended density (J/cm^2) - alveolar bone - jaw joints	(4.0) 4.0 (5.0 - 6.0) 4.0
Recommended frequency (Hz)	10.0
Therapy time at max. output (in min.)	0.25
Number of treatments per week - alveolar bone - jaw joints	 every other day 3x per week
Number of treatments total	7
Recommended BTL probe	infrared
Recommended output of BTL probe	200 mW

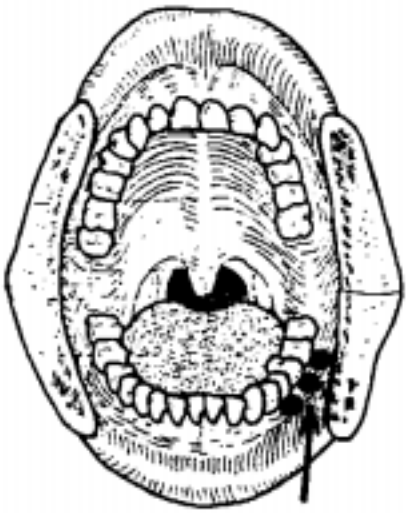
Comment:

- If blood supply to the fragment has not been damaged, the fragment is repositioned and fixed in situ.
- Apply irradiation to the break site (alveolar bone, jaw joint).

Diagnosis: Gingivitis

Programme No: 0313





Recommended density (J/cm^2)	3.0 (2.4 – 3.0)
Recommended frequency (Hz)	5.0
Therapy time at max. output (in min.)	2.05
Number of treatments per week - acuta - chronica	 daily every other day
Number of treatments total	2 - 4
Recommended BTL probe	red
Recommended output of BTL probe	30 mW

Comment:

- Irradiate 2 – 4x daily for 2 days prior to cleaning in order to reduce gingival sensitivity; then remove harmful substances and irradiate again after cleaning.
- Irradiate each papilla.
- Laser therapy has a bactericidal effect on micro flora, reduces inflammatory reaction, and improves local as well as total immunity response of the organism.

Diagnosis: **Herpes**

(herpes mostly in the facial area)

Programme No: 0314, 0315

Recommended density (J/cm^2)	3.0 (1.0 - 3.0) 1st part of therapy 3.0 2nd part of therapy
Recommended frequency (Hz)	cont. 1st part of therapy 5.0 (9.12, 4.7) 2nd part of therapy
Therapy time at max. output (in min.)	1.4 + 2.05
Number of treatments per week	daily – every other day
Number of treatments total	3 - 6
Recommended BTL probe	red/infrared
Recommended output of BTL probe	30 mW/200 mW

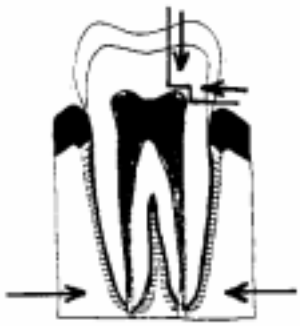
Comment:

- Probe: use red light for lips and mucosa, and infrared light for skin.
- Irradiate at the first signs of tension in the tissue.
- Results are better when started in the early stages of the condition.
- Irradiate at the edges of the lesion.
- Doses of sufficient strength must be given because herpes can worsen if only a stimulatory dose is given.
- During the therapy session, irradiate first with continuous mode and then with pulse frequency.
- Irradiation reduces pain.
- Normal healing takes 8 - 14 days, but only 2-4 days with laser therapy.
- Reduces recurrence of the condition.
- Prevents the forming of blisters.
- Has a healing, analgesic, and anti-edema effect.
- 1st and 2nd part of therapy should be understood as two parts of one therapy session.

Diagnosis: Hyperaemia pulpae

(Hyperemia of the pulp)

Programme No: 0316



Recommended density (J/cm^2)	4.0
Recommended frequency (Hz)	3.5
Therapy time at max. output (in min.)	2.46
Number of treatments per week	varies
Number of treatments total	min. 1
Recommended BTL probe	red
Recommended output of BTL probe	30 mW

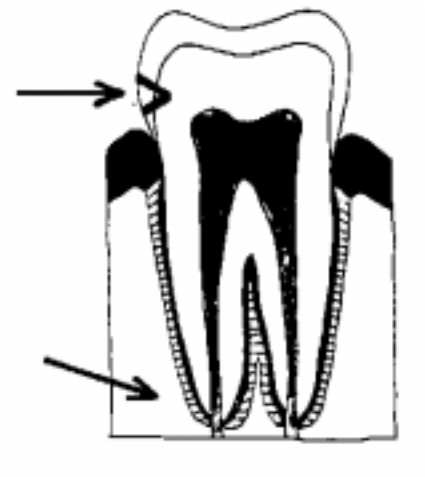
Comment:

- Hastens lymphatic drainage in the apical area, and reduces edema and hyperemia in the pulp.
- Laser therapy has an analgesic effect, and stimulates odontroblasts to form tertiary dentine.

Diagnosis: **Hypersensibilitas dentinalis**

(hypersensitivity of dentine)

Programme No: 0317



Recommended density (J/cm^2)	2.0 (1.0 - 3.0)
Recommended frequency (Hz)	9.0
Therapy time at max. output (in min.)	1.23
Number of treatments per week	every other day (daily)
Number of treatments total	1 - 10
Recommended BTL probe	red
Recommended output of BTL probe	30 mW

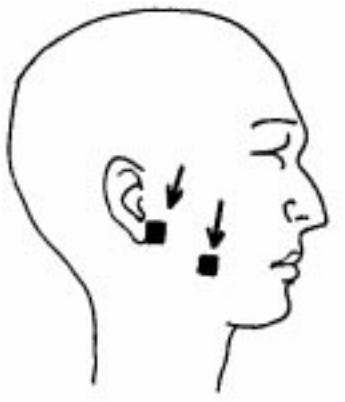
Comment:

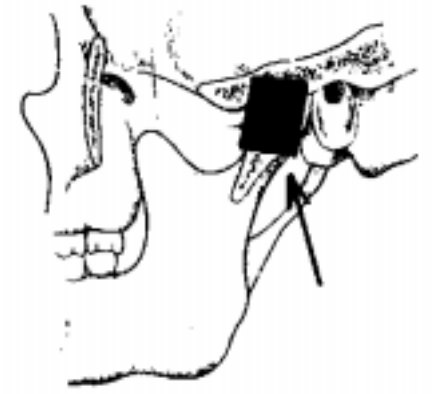
- Irradiate the labial side and oral side of the affected.
- Laser therapy has an analgesic effect.
- Fluorine-based medicaments can also be applied.
- Laser therapy is nearly 100% successful.

Diagnosis: Morbus temporomandibulare

(TMJ - a disease of the temporomandibular joint)

Programme No: 0318





Recommended density (J/cm^2)	4.0 (3.0 - 6.0)
Recommended frequency (Hz)	9.0
Therapy time at max. output (in min.)	0.25
Number of treatments per week	1 - 3
Number of treatments total	10
Recommended BTL probe	infrared
Recommended output of BTL probe	200 mW

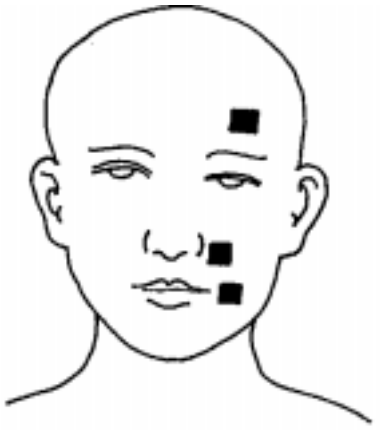
Comment:

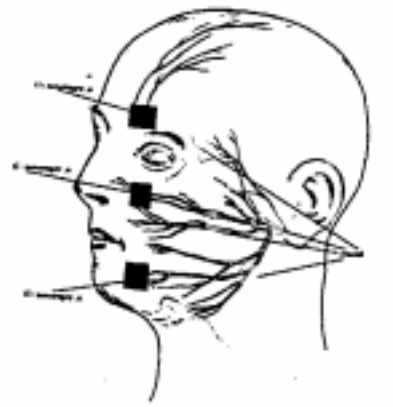
- Accurately diagnose the status of the TMJ.
- TMJ contusion: Density: 2 - 4 J/cm^2. 3 treatments per week until symptoms disappear. Decreases pain, edema, and hastens absorption of hematoma.
- TMJ-PDS (Pain dysfunction syndrome) is a long-term and difficult treatment. Combine laser therapy with traditional medical treatment. Irradiation decreases pain.
- Irradiate the ear in front of the tragus and below it, from the outer auditory canal to the head of the joint. Density: 2 J/cm^2. Apply to painful areas of the masseter.
- If there is a TMJ contusion, apply density of 5 - 6 J/cm^2 to the joint.
- Laser therapy has an analgesic effect.
- Acute problems can be treated in a short time, but treatment of chronic diseases can take a months.
- Laser therapy and thermotherapy can be used in combination.
- Another thermotherapy may be applied simultaneously.

Diagnosis: Neuralgia nervi trigemini

(neuralgia of a trigeminal nerve)

Programme No: 0319





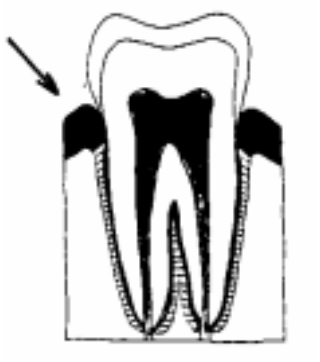
Recommended density (J/cm^2)	2.0 (2.0 - 4.0)
Recommended frequency (Hz)	5.0 (10.0)
Therapy time at max. output (in min.)	0.12
Number of treatments per week	3
Number of treatments total	6 - 10
Recommended BTL probe	infrared
Recommended output of BTL probe	200 mW

Comment:

- Exact diagnosis is very important.
- Having eliminated the cause, apply directly to trigeminal outlets (safeguard against vision damagesignificant improvement happens in the 1st phase of treatment.
- Idiopathic neuralgia sometimes recurs.
- Secondary neuralgia seldom recurs.
- Watch out for a regressive effect.

Diagnosis: **Parodontitis**

Programme No: 0320



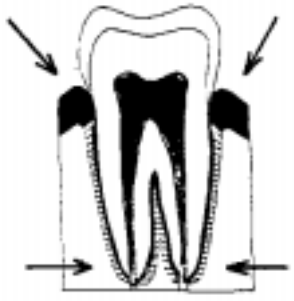
Recommended density (J/cm^2) gingivitis suppurative gingivitis deep periodontal pocket	(3.0) 2.5 3.0 5.0 - 7.0
Recommended frequency (Hz)	5.0
Therapy time at max. output (in min.)	2.05
Number of treatments per week - acuta - chronica	 daily every other day
Number of treatments total	varies
Recommended BTL probe	red
Recommended output of BTL probe	30 mW

Comment:

- Parodontitis is the result of uncontrolled gingivitis.
- Laser therapy has a bactericidal effect on pathogenic micro flora and reduces inflammatory reaction.
- Reduces gingiva inflammation and pain, enabling better dental hygiene.
- Stops or reduces formation of pus.
- Improves or removes pseudo-periodontal pockets.
- Decreases sensitivity to chewing.
- If surgery is required, laser therapy decreases pain and hastens the healing process.

Diagnosis: **Periodontitis**

Programme No: 0321



Recommended density (J/cm^2)	4.0 (2.0 - 6.0)
Recommended frequency (Hz)	9.0
Therapy time at max. output (in min.)	2.46
Number of treatments per week	daily
Number of treatments total	1 - 5
Recommended BTL probe	red
Recommended output of BTL probe	30 mW

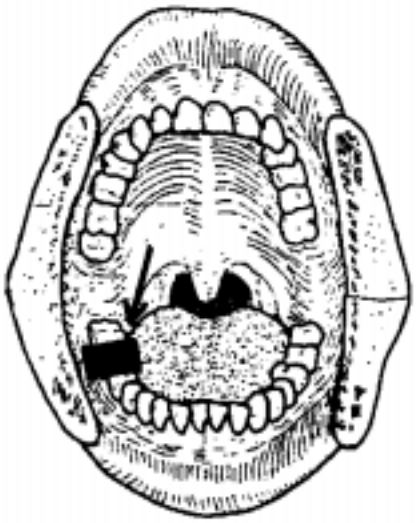
Comment:

- Recommended procedure:
  Irradiate the root tip and canals until exudation stops and the tooth is less painful to tap.
  After filling the canals**,** irradiate the root tip.
- Laser therapy has an analgesic, healing and anti-inflammatory effect.
- Reduces: gum inflammation and bleeding during surgery.
- Reduces pus in deep periodontal pockets.

Diagnosis: Postextractio

(prevention of post-extraction complications)

Programme No: 0322



Recommended density (J/cm^2)	3.0 (2.0 - 4.0)
Recommended frequency (Hz)	10.0
Therapy time at max. output (in min.)	2.05
Number of treatments per week	1
Number of treatments total	1
Recommended BTL probe	red
Recommended output of BTL probe	30 mW

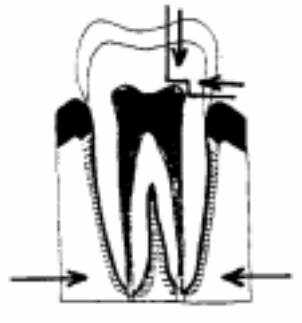
Comment:

- Laser therapy is recommended as a preventive measure against post-extraction complications.
- Application:
    1. Prior to extraction, irradiate mucosa above the tooth roots. Density: 2 J/cm^2.
    2. Place the probe in the tooth bed after an extraction. Density: 2 - 4 J/cm^2.
    3. Irradiate around the tooth gap. Density: 2 - 4 J/cm^2.
- Laser therapy has analgesic effect, is anti-inflammatory, and hastens healing.
- Supports microcirculation and hastens delivery of trombocytes to the bleeding alveoli.

Diagnosis: Preparatio

(caries removal, pillars treatment for prosthetic work)

Programme No: 0323



Recommended density (J/cm^2)	1.0 (2.0)
Recommended frequency (Hz)	6.0
Therapy time at max. output (in min.)	0.41
Number of treatments per week	varies
Number of treatments total	min. 1
Recommended BTL probe	red
Recommended output of BTL probe	30 mW

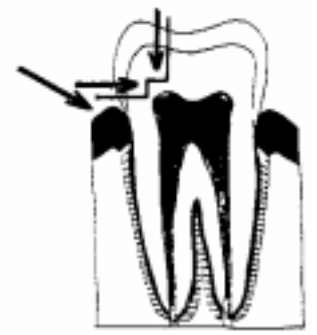
Comment:

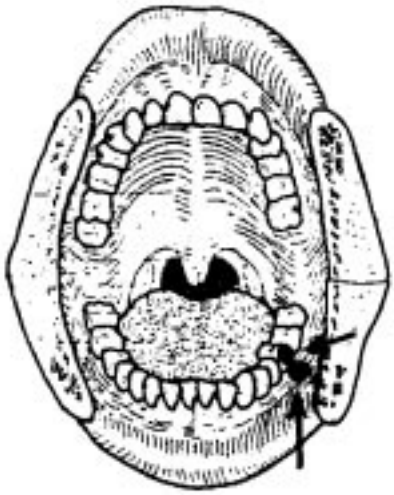
- Irradiate cavity and apex of tooth:
    1. prior to surgery
    2. prior to filling
- Results visible after 1st application
- Laser therapy has an analgesic effect and helps odontoblast rehabilitation.
- Irradiate pillars one time after preparation.

Diagnosis: Pulpa aperta

(openmarrow hollow)

Programme No: 0324





Recommended density (J/cm^2)	4.0
Recommended frequency (Hz)	3.5
Therapy time at max. output (in min.)	2.46
Number of treatments per week	varies
Number of treatments total	min. 1
Recommended BTL probe	red
Recommended output of BTL probe	30 mW

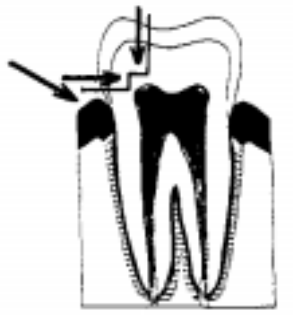
Comment:

- Treatment consists of covering the injured pulp with Ca(OH) based medicaments and laser irradiation.
- Not recommended for teeth planned for prosthesis. Laser therapy can disguise the actual status of the tooth pulp, which if unnoticed under the prosthesis and the tooth pulp may become chronic pulpitis.

Diagnosis: **Pulpitis**

(pulp inflammation)

Programme No: 0325



Recommended density (J/cm^2)	3.0 (2.0 - 4.0)
Recommended frequency (Hz)	10.0
Therapy time at max. output (in min.)	2.05
Number of treatments per week	varies
Number of treatments total	2 - 5
Recommended BTL probe	red
Recommended output of BTL probe	30 mW

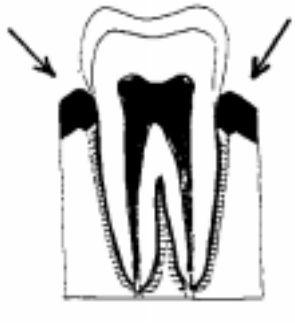
Comment:

- Irradiate the tip of the tooth root.
- Laser therapy has an analgesic effect.
- Increases the level of endorphin at synapses, supports lymphatic draining and reduces edema within the pulp.
- If needed, irradiation can be applied after the treatment, with the same density as used earlier.
- Anti-inflammatory effect of the laser positively affects the remains of the living pulp within the tooth apex, which reduces pain.
- Laser therapy cannot affect the course of acute or chronic pulpitis, but pain will be significantly reduced.

Diagnosis: Sanatio postoperativa

(post-surgical healing)

Programme No: 0326



Recommended density (J/cm^2)	3.0 (2.0 - 4.0)
Recommended frequency (Hz)	5.0 (5.0 - 10.0)
Therapy time at max. output (in min.)	2.05
Number of treatments per week	daily – every other day
Number of treatments total	2 - 5
Recommended BTL probe	red
Recommended output of BTL probe	30 mW

Comment:

- Hastens healing of the wound.
- Improves blood supply.
- Reduces complications.
- Recommended procedure:
    1. Irradiate mucosa above the apex of the tooth indicated for extraction, or above the location of the surgery. Density: 2 J/cm^2.
    2. Irradiate alveoli of the extracted tooth. Density: 4 J/cm^2.
    3. Irradiate rim of the alveoli or suture. Density: 2 J/cm^2.
    4. The lymphatic gland can also be irradiated at 2 J/cm^2 or the temporomandibular joint at 5 - 6 J/cm^2.
    5. For swelling of hematoma, irradiate at 2 - 4 J/cm^2.
- Positive effects are usually visible after the second therapy.
- Laser therapy has analgesic, anti-inflammatory, bio-stimulatory and anti-edema effect.